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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

Project	Date	Author

TITLE

TENTATIVE WORK PLAN FOR A STUDY OF THE DETERIORATION AND SALVAGE OF INSECT-KILLED PONDEROSA PINE TREES

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March 1, 1941

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SUBJECT—

INDEX NO.—

U.S. GOVERNMENT PRINTING OFFICE 8—9742

TENTATIVE WORK PLAN FOR A STUDY OF THE DETERIORATION AND SALVAGE OF INSECT-KILLED PONDEROSA PINE TREES

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TENTATIVE WORK PLAN FOR A STUDY OF THE DETERIORATION AND SALVAGE OF INSECT-KILLED PONDEROSA PINE TREES

Title: The rate of deterioration of insect-killed ponderosa pine trees.

Justification: There is a need for more information concerning the rate of deterioration of insect-killed ponderosa pine trees and the amount and kind of lumber that may be recovered from trees that have been dead more than one year. Three studies, each concerned with a phase of this subject, have been recorded. A study by Boyce (1)* furnished data on the rate of deterioration (percent of cull material) of trees treated by the fell-peel-burn method of insect control. A study by Patterson (2) reported the rate of deterioration and the percentage of insect-killed material removed from a small acreage but did not record the recovery at the mill. A study by Brundage and Orr (3) was concerned with the depreciation in lumber realization values from trees that had been dead for only one year. The proposed study should be made on a large acreage and should include a combined field study and mill study of trees that have been dead more than one year.

Object: The objectives of this study may be defined as follows:

1. What is the rate of deterioration of insect-killed ponderosa pine trees in each of Keen's tree classes 1, 2, 3, 4, etc. years after death?

   (a) What are the salvageable diameter limits of these trees?

   (b) What is the average number of 16-foot logs that may be salvaged from these trees?

   (c) What percent of the total log volume of these trees should be degraded or culled?

2. What is the lumber recovery that may be expected from insect-killed ponderosa pine trees in each of Keen's tree classes 1, 2, 3, 4, etc. years after death?

   (a) What grades of lumber can be cut from these trees?

   (b) What percent of the total volume of each log does this recovery represent?

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*Numbers in parentheses refer to literature cited.

Plan of Work:

1. Location of work: A study of this kind should be made on one or more western pine beetle check plots and in an area where close cooperation with a lumber mill can be secured. At the time this report was written, a study of this kind was contemplated on the Red Butte check plot (T. 6 N., R. 11 E., Sec. 13 E/2) in Klickitat County, Washington in cooperation with the J. Neils Lumber Company and their mill at Klickitat, Washington.

2. Methods to be employed: (The methods to be employed in a study of this kind have been worked out on the basis of a study on a specific check plot.)

The methods of this study may be divided into two phases: (A) Field study and measurement of trees on the Red Butte check plot, and (B) Mill scale study at the J. Neils Lumber Company mill at Klickitat, Washington.

(A) Field study: The field study should be started at the time the Red Butte plot is selectively cut-over. If possible, all insect-killed trees should be felled and bucked into 16-foot logs in order that their merchantability can be measured. However, prior to the actual felling, a basal examination of each tree should be made to determine its soundness. The logs that are considered merchantable should be given a serial number which should be painted on both ends of each log. A key should be made to identify each log and tree. Arrangements should be made to have these insect-killed logs loaded separately or at least loaded together.

(B) Mill study: The logs should be graded on the mill deck as green logs and then degraded for insect-caused defects. As the logs are cut each board should be classified according to standard lumber grades. The percent of the total log volume recovered can then be determined.

3. Records to be taken:

(A) Field study:

(1) Tree number, year killed, and insect brood.

(2) DBHOB

(3) DIB of each log at small end and diameter of heartwood at same end.

(4) Number of salvageable logs in each tree.

(5) Condition of bark: (a) Tight, (b) Loose (c) Absent

(6) Depth of penetration of blue stain, sap stain, and sap rots, and species represented.

(7) Depth of penetration of insect galleries, and species responsible.

(B) Mill study: (Needs to be worked out with Dr. Lodewick)

(1) Log grade as a green log.

(2) Log grade as a defective log.

(3) Number of boards of each standard lumber grade cut from each log.

(4) Number of boards of each standard lumber grade recovered from each log as graded rough dry.

4. Equipment needed:

(a) Datum holder (large size)

(b) Tally sheets for field and mill notes

(c) 2H pencil and eraser

(d) Diameter tape and calipers

(e) Paint pencils or paint gun

(f) White lead

5. Time needed:

(A) Field study: A total of three days may be required to record data in the field. One day will be required to examine and test the insect-killed trees before felling and approximately two days may be needed to measure the felled trees.

(B) Mill study: The time required for this phase of the study depends on the number of logs salvaged and the rapidity with which they can be milled. Probably 5-6 days may be needed for this phase.

6. Estimated cost: The cost of the Bureau participation in this study should not exceed $25 including per diem, transportation, and material for numbering the logs.

7. Cooperation needed: If possible a representative of the J. Neils Lumber Co., Bureau of Forest Pathology, and Bureau of Entomology and Plant Quarantine should make a cooperative field study. The mill study can best be made by a representative of the J. Neils Lumber Co. or a representative from the section of Forest Products of the Pacific Northwest Forest and Range Experiment Station.

8. Assignment: J. M. Whiteside in cooperation with the above-mentioned agencies.

Results:

1. What results may be expected: This study should result in the collection of data necessary to round out the available information on the salvage of insect-killed ponderosa pine; that is to say, the amount of lumber recoverable from insect-killed ponderosa pine trees one or more years after death on a larger area and in a different portion of the pine region.

2. How will the results be released: This study should result in the collection of sufficiently interesting data for the publication of a short article in one of the lumber trade magazines or the Journal of Forestry. The results of this study should be made available to pine lumber operators as soon as possible, so that, if possible, they too can utilize more of these insect-killed trees.

Respectfully submitted,

John M. Whiteside

March 1, 1941.

Literature cited:

(1) Boyce, J. S. 1923. The deterioration of felled western yellow pine on insect-control projects. U. S. Department of Agriculture Bulletin 1140.

(2) Patterson, J. E. 1930. Milling beetle-killed pine timber. The Timberman Vol. XXXI, no. 3, pp. 162-172.

(3) Brundage, M. R. and Orr, T. J., Jr. 1936. Lumber selling values of logs from infested ponderosa and Jeffrey pine trees salvaged in 1935 on an East-side pine region area. California Forest and Range Experiment Station Research Note, no. 9. April 10, 1936.